CLAIMS

1. Packaging system with at least two separate storage chambers for in-situ preparation of formulations of at least two constituents held separated up to the time of use, characterized in that it has at least one static micromixer which is provided with at least one component in the form of a disk (1) wherein said disk

- has at least one inlet opening (2) for the introduction of at least one feed stream into a linking channel (3) disposed in the plane of the disk and at least one outlet opening (4) for the outflow of the feed stream into a mixing zone (5) disposed in the plane of the disk,
- said inlet opening (2) being connected with the outlet opening (4) in a communicating manner through the linking channel (3) disposed in the plane of the disk and
- said linking channel (3) before opening into the mixing zone (5) being divided by microstructure units (6) into two or more part channels (7), the widths of the part channels being in the millimeter to submillimeter range and being smaller than the width of the mixing zone (5).

2. Packaging system as defined in claim 1, characterized in that it is provided with a system for conveying the components that are being kept separated through the micromixer and the micromixer has a housing with at least two inlets for the feed stream and at least one outlet for the product stream.

3. Packaging system as defined in claim 1 or 2, characterized in that in the housing the micromixer is provided with two or more disks (1) arranged in a stack, the disks being superposed on one another so that the inlet openings (2) form subsidiary channels linked with the feed stream inlets for the purpose of introducing the particular feed to be mixed, and the mixing zones (5) together form a main channel connected with the product outlet for carrying away the mixed product, the main channel and the subsidiary channels extending through the stack.

4. Packaging system as defined in one of the preceding claims, characterized in that the widths of the part channels (7) of the disks (1) at their opening into the mixing zone (5) amount to 1 µm to 2 mm;
and/or the ratio of the greatest width of the linking channel (3) and/or the width of the inlet opening (2) to the width of the part channels (7) of the disks (1) is greater than 2;
and/or the ratio of the length to the width of the part channels (7) of the disks (1) amounts to 1:1 to 20:1;
and/or the ratio of the width of the mixing zone (5) to the width of the part channels (7) of the disks is greater than 2.

5. Packaging system as defined in one of the preceding claims, characterized in that the disk (1) additionally has at least one flow-through opening (9)

6. Packaging system as defined in one of the preceding claims, characterized in that at least one of the inlet openings (2) or flow-through openings (9) or the mixing zone (5) of the disk (1) is enclosed by the plane of the disk, and the linking channel (3) is formed by an indentation.

7. Packaging system as defined in one of the preceding claims, characterized in that at least one of the inlet openings (2) or flow-through openings (9) or the mixing zone (5) of the disk (1) is disposed at the edge of the disk or as recesses at the edge of the disk.

8. Packaging system as defined in one of the preceding claims, characterized in that the disk (1) is provided with at least two inlet openings (2) for at least two different fluid streams, and each inlet opening (2) is connected with the mixing zone (5) through a linking channel (3).

9. Packaging system as defined in one of the preceding claims, characterized in that the outlet openings (4) of the disk (1) are arranged on a circular line.

10. Packaging system as defined in one of the preceding claims, characterized in that the disk (1) is provided with additional through-openings (12) and with additional part channels (13) that are integrated into the microstructure units (6) and separated from the part channels (7).

11. Packaging system as defined in one of the preceding claims, characterized in that either the linking channels (3) of the disks (1) are formed by indentations and the linking channels (3) before they open into the mixing zone (5) are divided by microstructure units (6) disposed on the disks(1) into part channels (7), or that the linking channels (3) of the disks (1) are formed by recesses in the disks (1), the disks being arranged as intermediate disks between a cover disk and a bottom disk, and the linking channels (3) before they open into the mixing zone (5) are divided into part channels (7) by microstructure units (6) disposed on the cover disks and/or bottom disks.

12. Packaging system as defined in one of the preceding claims, characterized in that in the resting position the mixing zone (5) is filled by a molded element closing off the outlet openings (4), and that during operation said molded element can be entirely or partly removed from the mixing zone (5) thereby entirely or partly freeing the outlet openings (4).

13. Method for in-situ preparation of a formulation consisting of least two constituents, whereby, by means of a packaging system as defined in one of claims 1 to 13, the constituents kept in separated supply containers are mixed with one another just before the formulation is used.

14.

14. Method as defined in claim 13, characterized in that the flow rate of the feed stream into the mixing zone (5) is greater than the flow rate of the product stream within the mixing zone (5).

15. Method as defined in claim 13 or 14, characterized in that the formulation is a micro-emulsion or a nanoemulsion.

16. Method as defined in one of claims 13 to 15, characterized in that one constituent is an aqueous, liquid phase and the other constituent is a hydrophobic, liquid phase or a phase containing a water-sensitive substance; or that the constituents contain substances which in contact with one another react chemically or modify the consistency of the mixture physically.

17. Method as defined in one of claims 13 to 16 for producing colorants, adhesives, foodstuffs, pharmaceutical agents, cosmetic agents, building materials or cleaning agents.

18. Method as defined in claim 17 for producing emulsion-forming preparations containing at least one hair-care or skin-care cosmetic, dermatological or pharmaceutical active ingredient, hair-firming agents, hair colorants or permanent wave agents.

19. Use of a static micromixer for mixing two or more constituents just before their use, the micromixer being provided with at least one component in the form of a disk (1), and wherein the disk (1)

- has at least one inlet opening (2) for the introduction of at least one feed stream into a linking channel (3) disposed in the plane of the disk and at least one outlet opening (4) for the outflow of the feed stream into a mixing zone (5) disposed in the plane of the disk,
- wherein the inlet opening (2) is connected with outlet opening (4) in communicating manner through the linking channel (3) disposed in the plane of the disk and
- wherein the linking channel (3) before opening into the mixing zone (5) is divided by microstructure units (6) into two or more part channels (7), the widths of the part channels being in the millimeter to submillimeter range and being smaller than the width of the mixing zone (5).